

REMARKS

Applicants have carefully studied the outstanding Official Action. The present response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Interview Summary

Applicants express their appreciation to Examiner Jyoti Nagpaul for the courtesy of an interview granted to applicants' representative, Sanford T. Colb (Reg. No. 26,856). The interview was held at the USPTO on August 12, 2009. The substance of the interview is summarized in the Interview Summary issued by the Examiner.

At the interview, the claims were discussed vis-à-vis the prior art of Kaltenhauser and Roth. The Interview Summary states, in relevant part, "Attorney presented proposed amendments to overcome claim objections, 112 2nd paragraph rejection and the art rejection, Kaltenhauser in view of Roth, set forth in the Office Action filed on April 27, 2009. If such an amendment is filed, the amendments overcome the rejections set for in the Office Action but further search would be required."

Claim amendments/Status

Applicants have amended the claims as discussed at the interview and further as indicated below.

The Application as examined included claims 1 - 10. In the present response, claims 1 - 10 are amended. Claims 11 - 13 are added.

Due to the extensive nature of the amendments to the claims, a clean copy of the amended claims is provided as an appendix for the convenience of the Examiner.

Support for new claim 11 is found, inter alia, in the last paragraph on page 6 of the specification as filed. Support for new claim 12 is found, inter alia, in the last paragraph on page 8 of the specification as filed. Support for new claim 13 is found, inter alia, in the last paragraph on page 8 of the specification as filed.

Claim Objections

Claim 3 is objected to as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant respectfully submits that claim 3 is in proper dependent form, since claim 1, from which claim 3 depends, does not limit the materials from which the measuring tube can be made, while claim 3 does limit the materials from which the measuring tube can be made.

Rejections under 35 USC § 112

Claims 8 - 9 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 8 - 9 have been amended to overcome the rejection.

Rejections under 35 USC § 103

Claims 1 - 10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kaltenhauser (U.S. Patent No. 3,402,116) in view of Roth (U.S. Patent No. 2,974,338). This rejection is respectfully traversed.

Kaltenhauser describes a chlorine measuring cell having coaxial cylindrical electrodes including electrode cleaning rings, driven by a motor, and supported by a U-shaped fork. Roth describes brushes including bristle tufts which tend to alternately gouge or lift the material being brushed and, at the same time to sweep the material being brushed.

Applicant has amended claim 1 to more clearly define the measuring cell of the present invention. Support for the amendment to claim 1 is found, *inter alia*, in the specification as filed in the paragraph bridging pages 4 - 5 and the first full paragraph on page 5. Claims 2 - 9 have also been amended for clarity and to provide proper antecedent basis for all elements recited therein in light of the amendments to claim 1.

Claim 10 has been amended to more clearly define the method of the present invention. Support for the amendments to claim 10 is found, *inter alia*, in the fourth paragraph on page 3 of the specification as filed.

The Examiner rejected independent claim 1 based on the combination of Kaltenhauser and Roth. Applicants respectfully submit, as discussed below, that neither Kaltenhauser nor Roth, alone or in combination, show or suggest a spectrophotometric

measuring cell, as recited in claim 1, including, *inter alia*, a light-transparent measuring tube and a shaker, operative to strike back and forth along a longitudinal axis of the measuring tube.

In the rejection of claims 1 and 10, the Examiner wrote:

"Kaltenhauser teaches a measuring cell comprising a free fluid passage way (8) through its inner bore from an inlet to an outlet (10). The measuring cell further comprising a **light-transparent measuring tube** ... The cell further comprising a shaker (balls) in the inner bore of tube (2) having means to strike back and forth **along the axis** to clean and strike the electrodes to cause them to be cleaned" (Office Action, page 4, first paragraph, emphasis added)

Applicants respectfully disagree with the Examiner's characterization of the measuring cell of Kaltenhauser.

Kaltenhauser describes a measuring cell including two cylindrical electrodes. The measuring cell of Kaltenhauser measures an electrical current between the two electrodes. (Kaltenhauser, column 1, lines 35 - 48) Since the accuracy of the measurement is dependent on the cleanliness of the electrodes, the measuring cell of Kaltenhauser provides rings for cleaning the electrodes.

The measuring cell of the present invention is a spectrophotometric measuring cell including a light-transparent measuring tube. Kaltenhauser does not show or suggest a measuring cell as recited in amended claim 1, including, *inter alia*, a light-transparent measuring tube.

Additionally, the cleaning rings of Kaltenhauser strike the electrodes. The cleaning rings of Kaltenhauser are not operative to strike back and forth along a longitudinal axis of a measuring tube. Kaltenhauser does not show or suggest a measuring cell including a shaker, operative to strike back and forth along a longitudinal axis of a measuring tube, as recited in amended claim 1.

Applicants respectfully submit that none of the cited prior art, alone or in combination, shows or suggests a spectrophotometric measuring cell, as recited in amended claim 1, including, *inter alia*, a light-transparent measuring tube and a shaker, operative to strike back and forth along a longitudinal axis of the measuring tube, and that amended claim 1 is therefore patentable.

Applicants further submit that none of the cited prior art, alone or in combination, shows or suggests a method for mixing at least one fluid and at least one reagent in a spectrophotometric measuring cell and for providing hands free cleaning of an inner core of the spectrophotometric measuring cell, as recited in amended claim 10, including, inter alia, providing a spectrophotometric measuring cell ... including a light-transparent measuring tube ... and a shaker ... operative to strike back and forth along a longitudinal axis of the measuring cell, ... actuating the shaker to strike back and forth at least once ... thereby cleaning the inner wall of the measuring tube ... and actuating the shaker to strike back and forth a plurality of times, thereby obtaining a homogenized solution, and that amended claim 10 is therefore patentable.

Applicants further submit that none of the cited prior art, alone or in combination, shows or suggests a method of cleaning an inner bore of a measuring tube of a spectrophotometric measuring cell, as recited in new claim 13, including, inter alia, providing a spectrophotometric measuring cell ... including a light-transparent measuring tube ... and a shaker, ... including a brush ... and actuating said shaker, including said brush, to strike back and forth at least once along a longitudinal axis of the measuring cell, said brush thereby cleaning said inner bore of said measuring tube, and that new claim 13 is therefore patentable.

Claims 2 - 9 each depend directly or ultimately from claim 1 and recite additional patentable subject matter and therefore are allowable. Claims 11 - 12 each depend directly from claim 10 and recite additional patentable subject matter and therefore are allowable.

Conclusion

In view of the foregoing remarks, all of the claims are believed to be in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including

extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,
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APPENDIX
CLEAN COPY OF THE AMENDED CLAIMS

1. A spectrophotometric measuring cell comprising:
 a measuring cell having a free fluid passageway throughout its inner bore from an inlet to an outlet, said measuring cell comprising a light-transparent measuring tube having a longitudinal axis a and an inner bore of a diameter b ,
 a shaker, accommodated in said inner bore of said measuring tube, said shaker being operative to strike back and forth along the longitudinal axis a , said shaker comprising a brush of an outer diameter b , said brush being adapted to provide an effective physical cleansing of the inner wall of the cell at the time the shaker is moving along the longitudinal axis; and
 an actuator, located outside said tube, adapted to actuate said shaker.
2. The measuring cell according to claim 1 and also comprising at least one of a monochromatic wavelength detector and a multi-channel RGB light emission detector.
3. The measuring cell according to claim 1, wherein the light-transparent measuring tube comprises at least one of a light transparent glass, quartz and a polymer.
4. The measuring cell according to claim 1, wherein at least a portion of the shaker is made of stainless steel.
5. The measuring cell according to claim 1, wherein the brush is made of nylon fibers.
6. The measuring cell according to claim 1, wherein the actuator is at least one electromagnetic coil, adapted to actuate the shaker magnetically.
7. The measuring cell according to claim 1, wherein said actuator comprises at least two electromagnetic actuators, at least one of said electromagnetic actuators being adapted to move the shaker in a first direction along said longitudinal axis, and at least one of said

electromagnetic actuators being adapted to move the shaker in a second direction opposite said first direction.

8. The measuring cell according to claim 9 and wherein said fluid comprises water from at least one of a swimming pool, a water treatment facility, a sewage treatment plant, a drinking water system and a cooling tower.

9. The measuring cell according to claim 1 and also comprising means to measure at least one of pH, Redox, free chlorine content, light scattering, turbidity and temperature of a fluid located in said measuring tube.

10. A method for mixing at least one fluid and at least one reagent in a spectrophotometric measuring cell and for providing hands free cleaning of an inner core of the spectrophotometric measuring cell, the method comprising:

- providing a spectrophotometric measuring cell having a free fluid passageway throughout its inner bore from an inlet to an outlet, said measuring cell including a light-transparent measuring tube having a longitudinal axis *a* and an inner bore of a diameter *b*, a shaker, accommodated in said inner bore of said measuring tube, said shaker being operative to strike back and forth along the longitudinal axis, said shaker comprising a brush of an outer diameter *b*, and an actuator, located outside said tube, adapted to actuate said shaker;

- filling the measurement cell with fluid;

- actuating the shaker to strike back and forth at least once, said brush thereby cleaning the inner wall of the measuring tube;

- calibrating for zero reading;

- flushing the measurement cell;

- sealing the outlet;

- filling said cell with at least one fluid sample and at least one reagent, thereby obtaining a non-homogenized admixture; and

- actuating the shaker to strike back and forth a plurality of times, thereby obtaining a homogenized solution.

11. A method according to claim 10 and wherein said actuating also comprises purging entrapped gas from said cell.

12. A method according to claim 10 and also comprising measuring a predetermined spectrum of said homogenized solution.

13. A method of cleaning an inner bore of a measuring tube of a spectrophotometric measuring cell, comprising:

providing a spectrophotometric measuring cell including a measuring cell having a free fluid passageway throughout its inner bore from an inlet to an outlet, said measuring cell comprising a light-transparent measuring tube having a longitudinal axis and an inner bore and a shaker, accommodated in said inner bore of said measuring tube, said shaker including a brush;

filling the measurement cell with fluid; and

actuating said shaker, including said brush, to strike back and forth at least once along said longitudinal axis, said brush thereby cleaning said inner bore of said measuring tube.